

TEST REPORT EN ISO 11148-6: 2012 Hand-held non-electric power tools - Safety requirements - Part 6: Assembly power tools for threaded fasteners	
Report reference No.	: SH11080399-005
Tested by (+ signature).....	: Jonathan Chu 
Approved by (+ signature)	: Michael Shen 
Date of issue	: 16 August, 2011
	Amendment-1: 12 April, 2013
	Amendment-2: 13 June, 2013
	Amendment-3: 17 July, 2014
	Amendment 4: 8 April, 2015
Testing laboratory	: Intertek Testing Services Shanghai Ltd.
Address.....	: Building No.86, 1198 Qinzhou Road (North), Shanghai 200233, China
Testing location/procedure	: TL <input checked="" type="checkbox"/> RMT <input type="checkbox"/> SMT <input type="checkbox"/> WMT <input type="checkbox"/> TMP <input type="checkbox"/>
Address.....	: As above
Applicant	: Ningbo Steed Tools Co., Ltd.
Address.....	: Dongcheng Village, Zhanqi Town, Yinzhou District, Ningbo,Zhejiang,China
Test specification:	
Standard	: EN ISO 11148-6: 2012
Test procedure	: CE-MD
Non-standard test method	: N/A
Test Report Form No	: TTRF EN ISO 11148_6A
TRF Originator.....	: Intertek Shanghai
Master TRF	: 2011-06
Test Item Description	: Air impact wrench / Air ratchet wrench
Trademark.....	: N/A
Model and/or type reference.....	: PAT-102, PAT-103, PAT-104, AT-5058A, AT-5059A, NST-5040WF, NST-5031F, NST-5058F, NST-5059F,NST-5040M,NST-500M, NST-5059M
Manufacturer.....	: Same as applicant
Rating(s)	: Max. air pressure: 6,3bar PAT-102, PAT-104: n ₀ : 7000/min PAT-103: n ₀ : 8000/min AT-5058A: n ₀ : 160/min AT-5059A: n ₀ : 180/min NST-5040WF: n ₀ : 7200/min NST-5031F: n ₀ : 9000/min NST-5058F: n ₀ : 160/min NST-5059F, NST-5059M : n ₀ : 160/min NST-5040M: n ₀ : 7000/min NST-500M: n ₀ : 10000/min
Remarks.....	: None

Test case verdicts

Test case does not apply to the test object.....: N/A

Test item does meet the requirement: P(Pass)

Test item does not meet the requirement: F(Fail)

Testing

Date of receipt of test item: March 15,2015

Date(s) of performance of test: March 15,2015 – April 8,2015

General remarks

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(See Enclosure #)" refers to additional information appended to the report.

"(See appended table)" refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

Determination of the test results includes consideration of measurement uncertainty from the test equipment and methods.

General product information:

The products covered by this report are hand-held air impact wrenches and air ratchet wrenches.

Amendment 4:

This report based on report ref. no. SH11080399-005 issued on 16 August, 2011 with Amendment 1: 12 April, 2013 ,Amendment 2: 13 June, 2013 and Amendment-3: 17 July, 2014 by Intertek Testing Services Shanghai Limited including following changes and/or additions:

Add new model NST-5059M in the report.

Copy of marking plate (Representative)



Air ratchet wrench

NST-5059M

Max. Air pressure: 6,3bar

n₀: 160/min



Serien Nr.: [xxxxxxxx]

BJ: 2015

Ningbo Steed Tools Co., Ltd.

Dongcheng Village, Zhanqi Town, Yinzhou District, Ningbo, Zhejiang, China

Bevollmächtigte Person in EU:

Name: [xxxx] Adresse: [xxxxxxxx]

Summary of testing:

All tests are carried out in accordance with the EN ISO 11148-6:2012 and the test results meet the requirements specified in the above-mentioned standards.

EN ISO 11148-6:2012			
Clause	Requirement - Test	Result - Remark	Verdict
4	Safety requirements and/or protective measures		
4.1	General		
	The machine shall comply with the following safety requirements and/or protective measures and be verified in accordance with Clause 5. In addition, the machine shall be designed in accordance with the principles of ISO 12100 for the relevant, but not necessarily significant, hazards, which are dealt with by this part of ISO 11148.		P
4.2	Mechanical safety		
4.2.1	Surfaces, edges and corners		
	Accessible parts of assembly power tools for threaded fasteners, except the inserted tool, shall not have sharp edges or angles or rough or abrasive surfaces; see ISO 12100:2010, 6.2.2.1.		P
4.2.2	Supporting surface and stability		
	Assembly power tools for threaded fasteners shall be so designed that they can be laid aside and remain in a stable position on a plane surface.		P
4.2.3	Hydraulic fluid ejection		
	Hydraulic systems of the power tool shall be enclosed so as to give protection against high pressure fluid ejection.	Pneumatic	N/A
4.2.4	Guards:		
	Guards covering the drive adaptor and the inserted tool are not required.		P
4.2.5	Access openings		
	Openings provided in the assembly power tool for threaded fasteners to allow access to adjusting means shall be designed to protect the operator from pinching his/her fingers while operating the tool; see ISO 13857.		P
4.2.6	Socket retainer		
	The socket retainer shall be designed and used so that it retains the socket on the output shaft while the assembly power tool for threaded fasteners is operating. Loose pin retainers shall have a positive means of retaining the pin.		P
4.2.7	Power tool construction		
	The assembly power tool for threaded fasteners shall be designed and constructed so as to prevent the loosening or loss of components during expected use, including rough handling and occasional dropping, which can compromise its safety functions. Verification shall be made in accordance with 5.5.		P
4.3	Thermal safety		

EN ISO 11148-6:2012			
Clause	Requirement - Test	Result - Remark	Verdict
	Surface temperatures of parts of the assembly power tools for threaded fasteners that are held during use or that can be inadvertently touched shall follow the provisions of ISO 13732-1 and ISO 13732-3. Pneumatic tools shall be designed to avoid the cooling effects of exhaust air on the handles and other gripping zones.		P
4.4	Noise	See Clause 5.2	P
4.5	Vibration	See Clause 5.3	P
4.6	Materials and substances processed, used or exhausted		
4.6.1	Exhaust air or gas		
	Assembly power tools for threaded fasteners driven with compressed air or gas or an internal combustion engine shall be designed in such a way that exhaust air or gases are directed so as not to cause a hazard to the operator and so that any other effects, such as blowing the dust and reflected air or gas from the workpiece onto the operator, are minimized.		P
4.6.2	Lubricants		
	When specifying lubricants, the manufacturer shall take environmental and occupational health aspects into account.		P
4.7	Ergonomics		
4.7.1	Design of the handle		
	Gripping areas of the assembly power tools for threaded fasteners shall be designed to provide a convenient, effective means for the operator to exercise full control over the assembly power tool for threaded fasteners.		P
	Handles and other parts used for gripping the assembly power tool for threaded fasteners shall be designed to ensure that the operator is able to grip the assembly power tool for threaded fasteners correctly and to perform the expected work. Handles shall suit the functional anatomy of the hand and the dimensions of the hands of the operator population. Further guidance on ergonomic design principles can be found in EN 614-1		P
	Assembly power tools for threaded fasteners having a mass greater than 2 kg (including the inserted tool) shall be capable of being supported by two hands whilst being lifted or operated.		P

EN ISO 11148-6:2012			
Clause	Requirement - Test	Result - Remark	Verdict
	The grip shall be such that normal feed force and reaction torque can be transmitted in an ergonomic way from the hand of the operator to the assembly power tool for threaded fasteners.		P
	The strength of a removable handle and the method of fixing it shall be appropriate to the intended principal use.		N/A
4.7.2	Suspension device		
	Provision shall be made, where appropriate, to enable the attachment to the assembly power tool for threaded fasteners of a suspension device in order to reduce, where practicable, the physical strain placed on the operator by the weight of the assembly power tool for threaded fasteners. The fitting of a suspension device shall not introduce an additional hazard.		P
4.7.3	Reaction torque absorption		
	Screwdrivers and nutrunners shall be designed to reduce the effect of the reaction torque as much as possible. The reaction torque can be absorbed by mechanical means, such as support handles, reaction bars or suspension arms.		N/A
	Where it is possible to envision that screwdrivers and nutrunners can be used in such a manner that the operator is required to absorb a harmful reaction torque, provisions shall be made for the attachment of absorbing devices (support handles, reaction bars). Reaction bars shall be designed to withstand the strain that can be exerted upon them.		N/A
	Straight rotary tools shall have provisions for mounting a second handle when the reaction torque absorbed by the operator can exceed 4 Nm.		N/A
	Pistol-grip tools shall have a provision for mounting a second handle when the reaction torque absorbed by the operator can exceed 10 Nm.		N/A
	Angle nutrunners shall have provision for mounting a reaction bar when the reaction torque absorbed by the operator can exceed 60 Nm.		N/A
	Figures 1 to 3 show examples of methods (indicated by the arrows in Figures 1 and 2) for absorbing reaction torque.		N/A
4.8	Controls		
4.8.1	Start-and-stop device		
	Assembly power tools for threaded fasteners shall be equipped with a single control device to start or stop them. It shall be adapted to the handle or to the part of the assembly power tool for threaded fasteners being gripped, so that the operator can activate it without releasing the grip on the handles.		P

EN ISO 11148-6:2012			
Clause	Requirement - Test	Result - Remark	Verdict
	Start-and-stop devices shall be so designed that the inserted tool ceases to be powered when the start-and stop device is released. Without manual effort and when completely released, the device shall move to the stop position, i.e. shall be of the hold-to-run type.	Hold to run type	P
	Start-and-stop devices shall be in the stop position or immediately move to the stop position when the assembly power tool for threaded fasteners is connected to the energy supply.	In the stop position	P
	It shall not be possible to lock the start-and-stop device in the running position.	No lock in the running position	P
	There is an exception for assembly power tools for threaded fasteners with a capacity to tighten fasteners having a thread size of 8 mm or less, which may have a lock-on start-and-stop device.		N/A
	Start-and-stop devices shall be so positioned or guarded that release cannot be unintentionally or inadvertently prevented.		P
4.8.2	Unintentional start		
	The start-and-stop device for open-ended spanners shall be so designed, positioned or guarded that the risk of unintentional start is minimized. Verification shall be made according to 5.4		N/A
	Open-ended spanners shall have a lock-off throttle.		N/A
4.8.3	Actuating forces		
	For assembly power tools for threaded fasteners that are intended for frequent starts or for use with precision work, the actuating force shall be small.		P
	For assembly power tools for threaded fasteners that are normally used in operations of long duration, the force to keep the start device in the run position should be small.		P
	For further information on trigger forces for control devices see EN 894-3:2000.		P
4.8.4	Directional control devices		
	An assembly power tool for threaded fasteners starting in an unintended direction can be hazardous due to the unexpected direction of the assembly power tool's movement. If it is possible for the assembly power tool for threaded fasteners to start in the reverse direction, the positions of the control device that control the forward and the reverse movements shall be clearly marked by arrows showing the rotational direction of the spindle.		P

EN ISO 11148-6:2012			
Clause	Requirement - Test	Result - Remark	Verdict
	Forward is defined as the direction of rotation of the inserted tool that tightens a right-hand threaded fastener. Examples of indicating the mode of operation are found in Annex C.		P
5	Verification		
5.1	General conditions for tests		
	Tests according to this part of ISO 11148 are type tests		P
5.2	Noise		
	The noise-emission values shall be measured and reported in accordance with ISO 15744. The noise emission values and their uncertainties shall be declared in accordance with ISO 4871.	See previous report	P
	Compliance with 4.4 may be verified through the comparison of the noise emission values with those for other machines of the same family or with machines of similar size and performance characteristics.		P
5.3	Vibration		
	The vibration total value shall be measured and reported in accordance with ISO 28927-2.	See previous report	P
	The vibration-emission value and its uncertainty shall be declared in accordance with EN 12096.		P
	Compliance with 4.5 may be verified through the comparison of the vibration emission values with those for other machines of the same family or with machines of similar size and performance characteristics.		P
5.4	Unintentional start		
	Compliance with 4.8.2 shall be verified as follows.		N/A
	Visually check that open-ended spanners require two separate and dissimilar actions to start them		N/A
	Open-ended spanners shall be subjected to a test in which the open-ended spanner shall be connected to the energy supply and placed in any possible position and pulled over the horizontal plane by its hose and the tool shall then not start.		N/A
5.5	Power tool construction		
	Compliance with 4.2.7 shall be verified by dropping a sample assembly power tool for threaded fasteners without inserted tool or accessory three times onto a concrete surface from a height of 1 m without affecting its operational and safety functions. The sample shall be positioned to vary the point of impact.		P
5.6	Structure of verification of safety requirements		
	Table 1 — Structure of verification	Satisfy the table 1	P

EN ISO 11148-6:2012			
Clause	Requirement - Test	Result - Remark	Verdict

6	Information for use		
6.1	Marking, signs and written warnings		
	Assembly power tools for threaded fasteners shall be marked visibly, legibly and indelibly with the following information	See copy of marking plate	
	name and full address of the manufacturer and, where applicable, his/her authorized representative		P
	designation of series or type		P
	serial number or batch number;		P
	year of construction, that is the year in which the manufacturing process is completed;		P
	rated speed, in revolutions per minute		P
	for pneumatic assembly power tools for threaded fasteners the rated air pressure marked as (max.)		P
	for hydraulic assembly power tools for threaded fasteners the nominal pressure and flow the maximum allowable setting for the pressure relief valve		N/A
	Assembly power tools for threaded fasteners shall be permanently marked with a graphical symbol in accordance with Annex C showing that the operator's instructions shall be read before work starts.		P
	The direction of rotation, as required in 4.8.4, shall be permanently marked in accordance with Annex C.		P
	Open-ended spanners shall have a warning sign in accordance with Annex C affixed to the head, warning against the risk of crushing.		N/A
	Tools with fixed torque reaction bars shall be provided with labels as shown in Annex C indicating the proper position of the reaction device		N/A
	Other graphical symbols that can be used are shown in Annex C		P
6.2	Instruction handbook		
6.2.1	General		
	For the information provided to the user, the content of Clause 6 together with ISO 12100:2010, 6.4.5.2 and 6.4.5.3, apply.	See copy of manual	P
	The information provided by the manufacturer is an important but not exclusive basis for the safe use of the assembly power tool for threaded fasteners. It shall provide sufficient information for the end user to perform an initial risk assessment.		P

EN ISO 11148-6:2012			
Clause	Requirement - Test	Result - Remark	Verdict
	The hazards identified in 6.2.2.4 to 6.2.2.12 are foreseeable in the general use of hand-held assembly power tools for threaded fasteners. The information provided with the tool shall state that the user or the user's employer shall assess the specific risks that can be present as a result of each use.		P
	The instruction handbook shall contain information relating to at least the following:		P
	name and address of the manufacturer or supplier or any other agent responsible for placing the assembly power tool for threaded fasteners on the market;		P
	designation of the series or type;		P
	operating instructions; see 6.3;		P
	information on noise emission; see 6.4.2;		P
	information on vibration transmitted to the hands of the operator; see 6.4.3		P
	maintenance instructions; see 6.5		P
	explanations of any symbols marked on the assembly power tool for threaded fasteners; see Annex C;		P
	information about residual risks and how to control them		P
6.2.2	Operator's instructions		
6.2.2.1	Statement of use		
	The operator's instructions shall include a description of the correct use of the assembly power tool for threaded fasteners and make reference to the appropriate inserted tools. The operator's instructions shall state that any other use is forbidden. Foreseeable misuse of the assembly power tool for threaded fasteners, which experience has shown to occur, shall be warned against.		P
6.2.2.2	Allowance for user		
	The operator's instructions shall be written primarily for professional users. Where a tool can be used by nonprofessional users, additional information for use shall be provided		P
6.2.2.3	General safety rules		
	Warnings shall be given with regard to significant hazards arising from or associated with the use of the assembly power tool for threaded fasteners.		P
	The following is a non-exhaustive list. Manufacturers may add additional warnings.		P

EN ISO 11148-6:2012			
Clause	Requirement - Test	Result - Remark	Verdict
	For multiple hazards, read and understand the safety instructions before installing, operating, repairing, maintaining, changing accessories on, or working near the assembly power tool for threaded fasteners. Failure to do so can result in serious bodily injury.		P
	Only qualified and trained operators should install, adjust or use the assembly power tool for threaded fasteners.		P
	Do not modify this assembly power tool for threaded fasteners. Modifications can reduce the effectiveness of safety measures and increase the risks to the operator.		P
	Do not discard the safety instructions; give them to the operator.		P
	Do not use the assembly power tool for threaded fasteners if it has been damaged.		P
	Tools shall be inspected periodically to verify that the ratings and markings required by this part of ISO 11148 are legibly marked on the tool. The employer/user shall contact the manufacturer to obtain replacement marking labels when necessary.		P
6.2.2.4	Projectile hazards		
	The following apply		P
	Failure of the workpiece, of accessories or even of the inserted tool itself can generate high-velocity projectiles.		P
	Always wear impact-resistant eye protection during the operation of the assembly power tool for threaded fasteners. The grade of protection required should be assessed for each use.		P
	Ensure that the workpiece is securely fixed.		P
6.2.2.5	Entanglement hazards		
	The following apply		P
	Entanglement hazards can result in choking, scalping and/or lacerations if loose clothing, personal jewellery, neckware, hair or gloves are not kept away from the tool and accessories.		P
	Gloves can become entangled with the rotating drive, causing severed or broken fingers		P
	Rotating drive sockets and drive extensions can easily entangle rubber-coated or metal-reinforced gloves		P
	Do not wear loose-fitting gloves or gloves with cut or frayed fingers		P
	Never hold the drive, socket or drive extension.		P
	Keep hands away from rotating drives.		P
6.2.2.6	Operating hazards		
	The following apply		P

EN ISO 11148-6:2012			
Clause	Requirement - Test	Result - Remark	Verdict
	The use of the tool can expose the operator's hands to hazards including crushing, impacts, cuts and abrasions and heat. Wear suitable gloves to protect hands.		P
	Operators and maintenance personnel shall be physically able to handle the bulk, weight and power of the tool.		P
	Hold the tool correctly; be ready to counteract normal or sudden movements and have both hands available.		P
	Maintain a balanced body position and secure footing		P
	In cases where the means to absorb the reaction torque are requested, it is recommended to use a suspension arm whenever possible. If that is not possible, side handles are recommended for straight case and pistol-grip tools. Reaction bars are recommended for angle nutrunners. In any case, it is recommended to use a means to absorb the reaction torque above 4 N·m for straight tools, above 10 N·m for pistol-grip tools, and above 60 N·m for angle nutrunners.		N/A
	Release the start-and-stop device in the case of an interruption of the energy supply.		P
	Use only lubricants recommended by the manufacturer		P
	Fingers can be crushed in open-ended crow-foot nutrunners.		N/A
	Do not use in confined spaces and beware of crushing hands between tool and workpiece, especially when unscrewing.		P
6.2.2.7	Repetitive motions hazards		
	The following apply		P
	When using a power tool for, the operator can experience discomfort in the hands, arms, shoulders, neck, or other parts of the body.		P
	While using an assembly power tool for threaded fasteners, the operator should adopt a comfortable posture whilst maintaining secure footing and avoiding awkward or off-balanced postures. The operator should change posture during extended tasks, which can help avoid discomfort and fatigue		P
	If the operator experiences symptoms such as persistent or recurring discomfort, pain, throbbing, aching, tingling, numbness, burning sensations or stiffness, these warning signs should not be ignored. The operator should tell the employer and consult a qualified health professional.		P
6.2.2.8	Accessory hazards		
	The following apply.		P
	Disconnect the assembly power tool for threaded fasteners from the energy supply before changing the inserted tool or accessory.		P

EN ISO 11148-6:2012			
Clause	Requirement - Test	Result - Remark	Verdict
	Do not touch sockets or accessories during impacting, as this increases the risk of cuts, burns or vibration injuries.		P
	Use only sizes and types of accessories and consumables that are recommended by the assembly power tool for threaded fasteners manufacturer.		P
	Use only impact-wrench-rated sockets in good condition, as poor condition or hand sockets and accessories used with impact wrenches can shatter and become a projectile.		P
6.2.2.9	Workplace hazards		
	The following apply		P
	Slips, trips and falls are major causes of workplace injury. Be aware of slippery surfaces caused by the use of the tool and also of trip hazards caused by the air line or hydraulic hose		P
	Proceed with care in unfamiliar surroundings. Hidden hazards, such as electricity or other utility lines, can exist		P
	The assembly power tool for threaded fasteners is not intended for use in potentially explosive atmospheres and is not insulated against coming into contact with electric power		P
	Make sure there are no electrical cables, gas pipes, etc., that can cause a hazard if damaged by use of the tool		P
6.2.2.10	Dust and fume hazards		
	The following apply	No such hazards	N/A
	Dust and fumes generated when using assembly power tools for threaded fasteners can cause ill health (for example, cancer, birth defects, asthma and/or dermatitis); risk assessment and implementation of appropriate controls for these hazards are essential.		N/A
	Risk assessment should include dust created by the use of the tool and the potential for disturbing existing dust.		N/A
	Direct the exhaust so as to minimize disturbance of dust in a dust-filled environment		N/A
	Where dust or fumes are created, the priority shall be to control them at the point of emission		N/A
	All integral features or accessories for the collection, extraction or suppression of airborne dust or fumes should be correctly used and maintained in accordance with the manufacturer's instructions.		N/A
	Use respiratory protection in accordance with employer's instructions and as required by occupational health and safety regulations.		N/A
6.2.2.11	Noise hazards		
	The following apply.		P

EN ISO 11148-6:2012			
Clause	Requirement - Test	Result - Remark	Verdict
	Unprotected exposure to high noise levels can cause permanent, disabling, hearing loss and other problems, such as tinnitus (ringing, buzzing, whistling or humming in the ears).		P
	Risk assessment and implementation of appropriate controls for these hazards are essential		P
	Appropriate controls to reduce the risk may include actions such as damping materials to prevent workpieces from "ringing".		P
	Use hearing protection in accordance with employer's instructions and as required by occupational health and safety regulations.		P
	Operate and maintain the assembly power tool for threaded fasteners as recommended in the instruction handbook, to prevent an unnecessary increase in noise levels.		P
	If the assembly power tool for threaded fasteners has a silencer, always ensure it is in place and in good working order when the assembly power tool for threaded fasteners is operating.		N/A
	Select, maintain and replace the consumable/inserted tool as recommended in the instruction handbook, to prevent an unnecessary increase in noise		P
6.2.2.12	Vibration hazards		
	The information for use shall draw attention to vibration hazards that have not been eliminated by design and construction and remain as residual vibration risks. It shall enable employers to identify the circumstances in which the operator is likely to be at risk from vibration exposure. If the vibration emission value obtained using ISO 28927-2 does not adequately represent the vibration emission in the intended uses (and foreseeable misuses) of the machine, additional information shall be supplied to enable the risks arising from vibration to be assessed and managed.		P
	For recommended interface dimensions for spindles and drive adapters to help reduce vibrations, see ISO/TS 21108.		P
	The following warnings (or equivalent) shall be given.		P
	Exposure to vibration can cause disabling damage to the nerves and blood supply of the hands and arms		P
	Keep the hands away from the nutrunner sockets.		N/A
	Wear warm clothing when working in cold conditions and keep your hands warm and dry.		P
	If you experience numbness, tingling, pain or whitening of the skin in your fingers or hands, stop using the assembly power tool for threaded fasteners, tell your employer and consult a physician.		P

EN ISO 11148-6:2012			
Clause	Requirement - Test	Result - Remark	Verdict
	Operate and maintain the assembly power tool for threaded fasteners as recommended in the instruction handbook, to prevent an unnecessary increase in vibration levels		P
	Do not use worn or ill-fitting sockets or extensions, as this is likely to cause a substantial increase in vibration.		P
	Select, maintain and replace the consumable/inserted tool as recommended in the instruction handbook, to prevent an unnecessary increase in vibration levels.		P
	Sleeve fittings should be used where practicable.		P
	Support the weight of the tool in a stand, tensioner or balancer, if possible		P
	Hold the tool with a light but safe grip, taking account of the required hand reaction forces, because the risk from vibration is generally greater when the grip force is higher.		P
6.2.3	Additional safety instructions for pneumatic power tools		
	The following additional warnings (or equivalent) shall be given with all pneumatic assembly power tools for threaded fasteners.		P
	Air under pressure can cause severe injury:		P
	always shut off air supply, drain hose of air pressure and disconnect tool from air supply when not in use, before changing accessories or when making repairs;		P
	never direct air at yourself or anyone else.		P
	Whipping hoses can cause severe injury. Always check for damaged or loose hoses and fittings		P
	Cold air shall be directed away from the hands		P
	Do not use quick-disconnect couplings at tool inlet for impact and air-hydraulic impulse wrenches. Use hardened steel (or material with comparable shock resistance) threaded hose fittings		P
	Whenever universal twist couplings (claw couplings) are used, lock pins shall be installed and whipcheck safety cables shall be used to safeguard against possible hose-to-tool and hose-and-hose connection failure.		P
	Do not exceed the maximum air pressure stated on the tool.		P
	For torque-control and continuous-rotation tools, the air pressure has a safety critical effect on performance. Therefore, requirements for length and diameter of the hose shall be specified		N/A
	Never carry an air tool by the hose.		P
6.2.4	Additional safety instructions for hydraulic power tools		
	The following additional warnings (or equivalent) shall be given with all hydraulic assembly power tools for threaded fasteners.		N/A

EN ISO 11148-6:2012			
Clause	Requirement - Test	Result - Remark	Verdict
	Do not exceed the maximum relief-valve setting stated on the tool		N/A
	Carry out a daily check for damaged or worn hoses or hydraulic connections and replace if necessary		N/A
	Use only clean oil and filling equipment		N/A
	Power units require a free flow of air for cooling purposes and should, therefore, be positioned in a well ventilated area free from hazardous fumes.		N/A
	Ensure that couplings are clean and correctly engaged before operation		N/A
	Do not inspect or clean the tool while the hydraulic power source is connected. Accidental engagement of the tool can cause serious injury		N/A
	Do not install or remove the tool while the hydraulic power source is connected. Accidental engagement of the tool can cause serious injury		N/A
	Be sure all hose connections are tight.		N/A
	Wipe all couplers clean before connecting. Failure to do so can result in damage to the quick couplers and cause overheating.		N/A
	Instructions shall be given that only hydraulic fluid recommended by the manufacturer shall be used.		N/A
6.2.5	Specific safety instructions		
	Warnings shall be given about any specific or unusual hazards associated with the use of the assembly power tool for threaded fasteners. Such warnings shall indicate the nature of the hazard, the risk of injury and the avoidance action to take.		P
6.3	Operating instructions		
	The instructions shall include, where appropriate		P
	instructions for setting up or fixing the assembly power tool for threaded fasteners in a stable position, appropriate for assembly power tools for threaded fasteners that can be mounted in a support		P
	assembly instructions, accessories and inserted tools		P
	illustrated description of functions;		P
	limitation on tool use due to environmental conditions		P
	instructions for setting and testing		P
	general instructions for use, including changing inserted tools and limits on the size and type of workpiece		P
6.4	Data		
6.4.1	General		
	The instructions shall include the information on the data plate and the following		P
	mass of the assembly power tool for threaded fasteners		P

EN ISO 11148-6:2012			
Clause	Requirement - Test	Result - Remark	Verdict
	for hydraulic assembly power tools for threaded fasteners		N/A
	specification of the coupling		N/A
	specification of hoses with regard to pressure and flow		N/A
	maximum inlet temperature of the inlet fluid		N/A
6.4.2	Noise		
6.4.2.1	Declaration of emission		
	The instructions shall include the noise-emission values and uncertainties as specified in 5.2 and the reference number of the test code, ISO 15744.		P
6.4.2.2	Additional information		
	If the values for noise emissions obtained using the appropriate tests defined in 5.2 do not adequately represent the emissions during the intended uses of the machine, additional information and/or warnings shall be supplied to enable an assessment and the management of the associated risks.		N/A
	Information on noise emission should also be provided in the sales literature.		P
6.4.3	Vibration		
6.4.3.1	Declaration of emission		
	The instruction handbook shall include the vibration-emission value and uncertainty as specified in 5.3 and the reference number of the test code, ISO 28927-2.		P
6.4.3.2	Additional information		
	If the values for vibration emissions obtained using the appropriate tests defined in 5.3 do not adequately represent the emissions during the intended uses of the machine, additional information and/or warnings shall be supplied to enable the potential risks to be assessed and managed		N/A
	Information on vibration emission should also be provided in the sales literature.		P
6.5	Maintenance instructions		
	The maintenance instructions shall contain		P
	instructions to keep the assembly power tools for threaded fasteners safe by regular preventative maintenance		P
	information on when the regular preventative maintenance shall be carried out, for instance, after a specified time of operation, a specified number of cycles/operations or a stated number of times per year		P
	instructions for disposal so as not to expose personnel and the environment to hazards		P

EN ISO 11148-6:2012			
Clause	Requirement - Test	Result - Remark	Verdict
	list of the service operations that the user should carry out		P
	instructions for lubrication, if required		P
	instructions to check the speed and make a simple check of the vibration level after each service		P
	instructions to check the speed regularly		P
	specifications of the spare parts for use when these affect the health and safety of operators		P
	Maintenance instructions shall include the precautions to take to avoid exposure to hazardous substances deposited (due to work processes) on the tool		P
Annex A	List of significant hazards		
Annex B	Examples of assembly power tools for threaded fasteners covered by this part of ISO 11148		
Annex C	Symbols for labels and signs		
Annex D	Additional safety requirements related to internal combustion engine power tools		N/A